Docket No. DP310566

CLAIMS

1. A piston assembly for a magneto-rheological fluid damper, the piston assembly comprising:

a piston rod having an axial bore therethrough;

a piston core coupled to a distal end of the piston rod for movement therewith;

an electrical terminal located on the piston core;

a conductor coupled to the terminal to form an electrical connection, the conductor passing through the bore in the piston rod;

a sealing member adjacent to the distal end of the piston rod for preventing the penetration of fluid into the bore; and

a support member located between the sealing member and an opening into the bore, the support member sized to block the opening into the bore to prevent the sealing member from being forced through the opening when the piston assembly is subjected to pressure.

2. A piston assembly as claimed in claim 1, wherein the support member is concentric with the conductor and slideable over the conductor from a proximal position to a distal position during assembly of the piston;

wherein when the support member is in the proximal position, the distal end of the conductor is exposed so that the electrical connection between the conductor and the terminal can be made; and

wherein when the support member is in the distal position, the support member covers the electrical connection.

3. A piston assembly as claimed in claim 2, wherein the support member comprises a cylindrical sleeve having a raised feature near a distal end of the sleeve and wherein the piston rod engages the raised feature during assembly to slide the support member from the proximal position to the distal position as the piston rod is coupled to the piston core.

4. A piston assembly as claimed in claim 2, wherein the support member comprises a cylindrical sleeve having an inner diameter, a small outer diameter portion and a large outer diameter portion located distally of the small outer diameter portion, wherein the bore of the piston rod comprises a small inner diameter portion and a large inner diameter portion located distally of the small inner diameter portion, wherein the inner diameter of the support member is greater than or equal to an outer diameter of the distal end of the conductor, wherein the small outer diameter portion of the support member is sized to fit within the small inner diameter portion of the bore, and wherein the large outer diameter portion of the support member is sized to fit within the large inner diameter portion of the bore but not within the small inner diameter portion of the bore.

5. A piston assembly as claimed in claim 4, wherein the piston rod engages the support member during assembly to slide the support member from the proximal position to the distal position as the piston rod slides over the conductor and is coupled to the piston core.

6. A piston assembly as claimed in claim 4, wherein the outer surface of the sleeve is tapered from the large outer diameter portion of the sleeve to the small outer diameter portion of the sleeve and the inner surface of the bore is

correspondingly tapered at a similar angle from the large inner diameter portion of the bore to the small inner diameter portion of the bore.

7. A piston assembly as claimed in claim 2, wherein the support member comprises a sleeve made from an electrically insulating material.

8. A piston assembly as claimed in claim 7, wherein the electrically insulating material comprises nylon 6/6.

9. A piston assembly as claimed in claim 7, wherein the electrically insulating material comprises a nylon 6/6 having at least 15 percent glass content.

10. A piston assembly for a magneto-rheological fluid damper, the piston assembly comprising:

a piston rod having an axial bore therethrough;

a piston core coupled to a distal end of the piston rod for movement therewith,

an electrical terminal located on the piston core;

a conductor coupled to the terminal to form an electrical connection, the conductor passing through the bore in the piston rod;

a means for sealing the bore to prevent fluid from penetrating into the bore; and

a means for supporting the sealing means to prevent the sealing means from being forced into the bore of the piston rod beyond the electrical connection when the piston assembly is subjected to pressure.

11. The piston assembly of claim 10, further comprising a means for electrically insulating the electrical connection between the terminal and the conductor.

12. The piston assembly of claim 11, wherein the support means and the insulating means are the same structure.

13. A piston assembly for a magneto-rheological fluid damper, the piston assembly comprising:

a piston rod having an axial bore therethrough;

a piston core coupled to a distal end of the piston rod for movement therewith;

an electrical terminal located on the piston core;

a conductor coupled to the terminal to form an electrical connection, the conductor passing through the bore in the piston rod; and

a support member that is concentric with the conductor and slideable over the conductor from a proximal position to a distal position during assembly of the piston;

wherein when the support member is in the proximal position, a distal end of the conductor is exposed so that the electrical connection between the conductor and the terminal can be made;

wherein when the support member is in the distal position, the support member covers, to electrically insulate, the electrical connection; and

wherein the support member is sized to be engaged by the piston rod to slide the support member from the proximal position to the distal position as the piston rod is slid over the conductor into engagement with the piston core.

14. A method of assembling a piston assembly for a magneto-rheological fluid damper, the method comprising the steps of:

providing a piston rod having an axial bore therethrough;

providing a piston core having an electrical terminal;

providing a conductor that is sized to slideably fit within the bore in the piston rod;

providing a support member that is slideable over a distal end of the conductor from a proximal position to a distal position, wherein the distal end of the conductor is exposed when the support member is in the proximal position;

forming an electrical connection between the terminal and the conductor when the support member is in the proximal position;

sliding the piston rod over the conductor such that the conductor passes through the axial bore in the piston rod and such that the piston rod operatively engages the support member to slide the support member from the proximal position to the distal position, wherein the support member insulates the electrical connection when in the distal position; and

coupling piston core to the piston rod for movement therewith.

15. A support member for a piston assembly of a magneto-rheological fluid damper having a piston rod with an axial bore therethrough, a piston core with an electrical terminal, and a conductor passing through the bore in the piston rod and

coupled to the terminal to form an electrical connection, the support member comprising:

a sleeve having an inner diameter, a small outer diameter portion and a large outer diameter portion, wherein the inner diameter of the sleeve is sized to closely fit an outer diameter of the associated conductor while permitting the sleeve to slide over the conductor and wherein the large outer diameter portion of the sleeve is sized so as not to permit the sleeve to pass completely through the bore of the associated piston rod.

16. The support member of claim 15, wherein the outer surface of the sleeve is tapered from the large outer diameter portion to the small outer diameter portion.

17. The support member of claim 15, wherein the sleeve is sized to block passage through the bore of the associated piston rod.

18. The support member of claim 15, wherein the sleeve comprises an electrically insulating material.

19. The support member of claim 18, wherein the electrically insulating material comprises nylon 6/6.

20. The support member of claim 18, wherein the electrically insulating material comprises a nylon 6/6 having at least 15 percent glass content.